

Appln No. 10/044,413

Amdt date February 28, 2005

Reply to Office action of August 26, 2004

Amendments to the Specification:

Please replace the title as follows:

~~FORWARD ERROR CORRECTION~~ LOW-DENSITY PARITY CHECK FORWARD
ERROR CORRECTION

Please replace the paragraph on page 1, starting at line 8 with the following new paragraph:

Electronic communication channels provide for the transmission of large quantities of information. Communication channels, however, tend to be noisy. The noise inherent inherit in a communication channel tends to produce errors in the transmitted information. Accordingly, redundant information is often included in transmitted data, with the redundant information allowing a receiver to reconstruct the transmitted message.

Please replace the paragraphs on page 4, starting at line 16 and continuing to page 5, line 12 with the following new paragraphs:

In a further embodiment of the invention, the invention comprises a method of forming code bits for use in a system employing a linked low density parity priority check code. The method comprises receiving a data stream comprising data bits $d_1 \dots d_{1A}$, $d_2 \dots d_{2a} \dots d_y \dots d_{ya} \dots d_x \dots d_{xa} \dots$. The method further comprises forming a code stream comprising code bits $c_1 \dots c_{1A} \dots c_{1B}$, $c_2 \dots c_{2a} \dots c_{2b} \dots c_y \dots c_{ya}$, $c_{ya+1} \dots c_{yb} \dots c_x \dots c_{xa}$, $c_{xa+1} \dots e_{be} c_{xb} \dots$ where $c_x \dots c_{xa}$ are $d_x \dots d_{xa}$. At least some of the

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bits $c_{xa+1} \dots c_{xb}$ are an XOR combination of prior bits including at least some of the bits $c_{ya+1} \dots c_{yb}$.

A further embodiment of the invention provides a forward error correction system. The forward error correction system uses iteratively decoded codes. The system comprises an encoder. The encoder encodes information symbols to form code symbols. The code symbols are comprised of sets of code symbols, a current set of code symbols comprising a number of code symbols formed of information symbols and a number of code symbols formed using information symbols, code symbols with a previous set of code symbols, and previously formed code symbols of a current set of code symbols. The system further comprises a decoder, the decoder iteratively decoding the code symbols. In a further embodiment of the invention the code symbols are formed using an XOR operation. In one embodiment the XOR operation is accomplished in accordance with a linked low density parity~~priority~~ check code. In a further embodiment the linked LDPC code is formed by extending a portion of an original LDPC matrix. In one embodiment the portion of the original LDPC matrix comprises a base portion, an upper extending portion, and a sideways extending portion.

Please replace the paragraph starting on page 5, starting at line 33 and continuing to page 6, line 8 with the following new paragraph:

Fig. 3 illustrates a data transmission system in accordance with the present invention. A data stream comprising information words is provided to an encoder 15. The encoder forms code words using the information words. The encoder provides the code words to a transmitting unit 17. The transmitting unit

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transmits the code words over a transmission media 18. In one embodiment, the transmission media is an optical fiber~~fiber~~optic line and the code words are transmitted serially over the optical fiber~~fiber~~optic line. In another embodiment, the transmitting unit is an RF transmitter and the code words are transmitted through space.